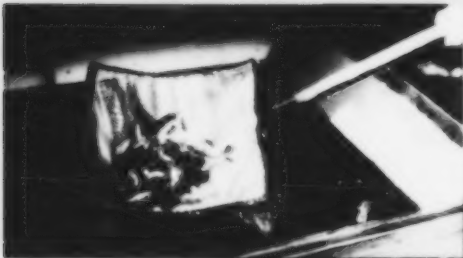
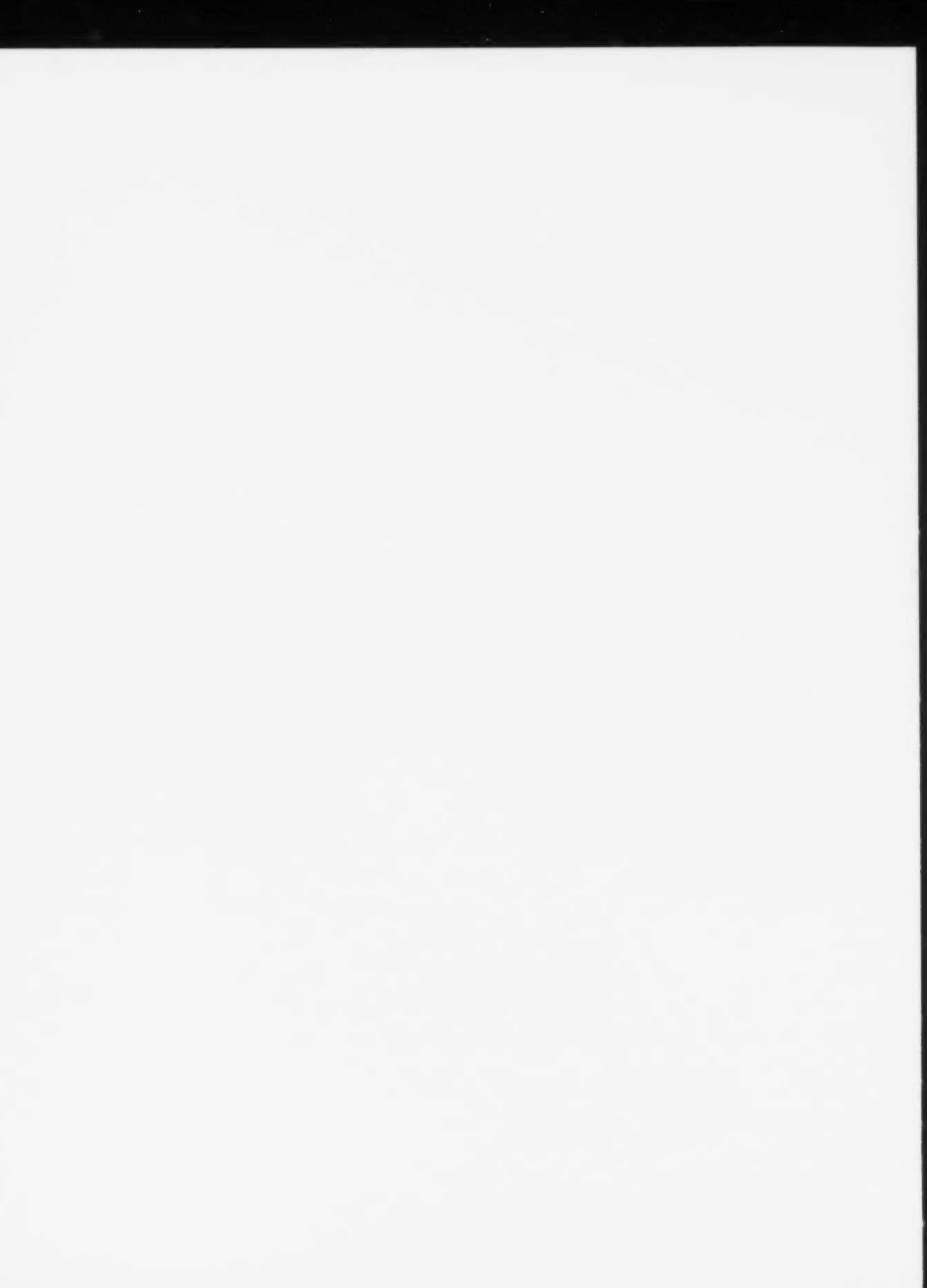


A Survey of Walleye Stocking Activities in North America

May 2008





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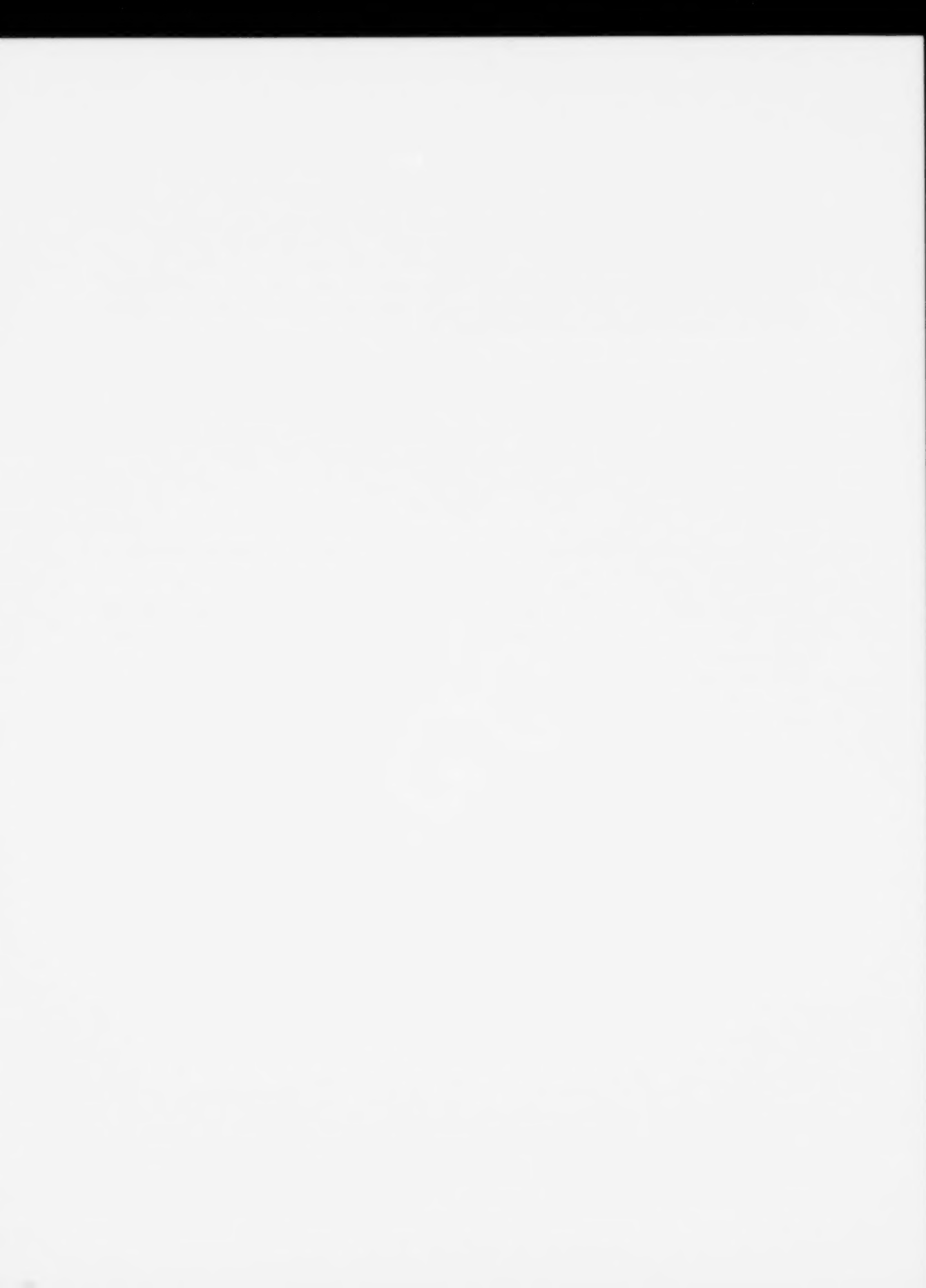
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Abstract

A survey of walleye (*Sander vitreus*) stocking activities in North America was conducted in 2007. Forty-one jurisdictions (5 Canadian and 36 American) reportedly stocked approximately 869 million walleye in 1,989 North American waters during 2006. Most walleye were stocked either to create and sustain recreational fisheries or to rehabilitate degraded populations. Although fry were the most common life stage stocked, there are indications that more resource management agencies are rearing walleye to the fingerling stage. It is anticipated that walleye stocking will continue to increase in the future.

Résumé

D'après une enquête réalisée en 2007 sur les activités d'empoissonnement en dorés (*Sander vitreus*) en Amérique du Nord, 41 territoires (cinq territoires canadiens et 36 territoires américains) ont dit avoir empoissonné, en 2006, 1 989 plans d'eau d'Amérique du Nord en utilisant environ 869 millions de dorés. La plupart des dorés ont été introduits soit pour créer et soutenir des pêches de loisir, soit pour reconstituer des populations dégradées. Les dorés sont pour la plupart introduits au stade du nourrain, mais à en juger par l'enquête, les organismes de gestion des ressources seraient de plus en plus nombreux à élever leurs dorés jusqu'au stade de l'alevin d'un an. On prévoit que l'empoissonnement en dorés continuera de croître.



Introduction

Walleye (*Sander vitreus*) are very important to the recreational fisheries in Canada and the United States. Based on a 2005 survey of recreational angling in Canada, walleye was the predominant species caught in the country (Canada Department of Fisheries and Oceans 2007). A similar national survey conducted in the United States indicated that 3.8 million anglers spent almost 51.9 million days angling for walleye in 2001 (United States Department of the Interior et al. 2002).

The popularity of walleye as a sport fish has resulted in a situation where demand exceeds supply in many areas. In addition, walleye are being sought to create new recreational fisheries outside their original range in North America. The increasing demand for walleye has lead many resource management agencies to initiate or expand walleye culture and stocking programs.

There have been a number of surveys of walleye stocking activities in North America in the past. Laarman (1978) assembled case histories of walleye stocking in inland lakes, impoundments and the Great Lakes. Conover (1986) conducted a survey of walleye stocking across the continent in 1984. A similar survey was conducted by Fenton et al. (1996) for a period extending from 1986-1991. More recently, a survey of jurisdictions which stocked walleye was conducted during the development of a model to predict walleye stocking success (Bennett and McArthur 1990).

This survey was initiated to document walleye stocking activities in 2006 and, in comparison with earlier surveys, to examine any trends or changes in walleye stocking as a management activity in North America.

Methods

This survey of walleye stocking activities in different North American jurisdictions was conducted during the summer of 2007. A questionnaire consisting of ten questions was sent to natural resource management agencies across Canada and the United States. Agency internet sites were also reviewed for pertinent information. Follow-up E-mails and telephone calls were made in September 2007 to those agencies for which a response had not been received.

Information, such as the number of fish and number of waters stocked, was requested for 2006 walleye stocking activities. Other more generic information which was requested included stocking objective, stocking rates, stocking frequency, method of release, stocking dates and water temperatures at the time of release.

For the purposes of this survey, definitions of life stage were developed to ensure consistency in reporting. Fry were considered to be post-hatch walleye which had absorbed their yolk sac and were stocked in the spring at sizes of approximately 0.5 grams in weight. Summer fingerlings were fish which had been extensively reared (usually in ponds) and were stocked in the late spring-early summer at 1-2 months of age and at sizes generally ranging from 5-10 cm. Advanced fingerlings were fish which had been intensively reared and were stocked in the late summer-fall at 4-6 months of age and sizes which usually exceeded 10 cm. Juveniles were considered to be

immature fish at 1-3 years of age. Adult fish were deemed to be mature fish exceeding three years of age.

This survey did not collect information on the stocking of saugeye or other walleye-sauger hybrids.

Walleye Stocking Activity by Jurisdiction

Information on walleye stocking activities was obtained from 36 states and five provinces. Some jurisdictions provided information for 2007 while, in another instance, a mean value from several years was utilized. Based on information collected from 36 states and five provinces, it was estimated that almost 869 million walleye (all life stages combined) were stocked in North American waters in 2006 (Table 1).

Jurisdictions which had the largest walleye stocking programs (i.e., > 40 million fish) included Minnesota, Pennsylvania, Kansas, New York, South Dakota, Montana and Saskatchewan. Several agencies, including Iowa, Wisconsin and Illinois, appear to have reduced their walleye stocking program in 2006 from levels reported by Conover (1986).

Lakes were the most common type of waterbody stocked with walleye in 2006 (Table 2) but walleye were also stocked in rivers, reservoirs and ponds. Stocking has served to expand the range of walleye in North America particularly in the southern and western areas of the continent.

Stocking Objectives

The most common walleye stocking objectives were either to create and maintain a recreational fishery or to rehabilitate a degraded population (Table 3). In several instances walleye were also being used in an attempt to manipulate the resident fish community. A number of midwestern jurisdictions require regular stocking programs to re-introduce walleye in waters which experience winter/summer kill. Only one agency stocked walleye into waters which sustained a commercial fishery.

Table 3. Objectives of walleye stocking programs identified by various North American jurisdictions. Some jurisdictions provided more than one stocking objective.

Stocking Objective	Number of Respondents
Create and/or sustain recreational fisheries	32
Rehabilitate/restore degraded populations	10
Predatory control/ biomanipulation	6
Introductions/re-introductions	5
Create self-sustaining populations	3
Develop broodstock sources	1
Enhance genetic integrity	1
Develop coolwater culture expertise	1

Table 1. Walleye stocked in 2006 by various North American jurisdictions.

Province/State	No. Waters Stocked	No. of Walleye Stocked		Advanced Fingerlings	Other
		Fry	Fingerlings		
Alberta	4	24,400,000 ¹	425,930	0	0
Manitoba	47	27,850,000	0	0	0
Ontario	52	1,376,463	234,640	52,647	462 adults
Québec	6	1,000,000	700	0	0
Saskatchewan	88	40,265,000	50,600	0	0
Canada	197	94,891,463	711,870	52,647	462
Alabama	1	7,000	0	0	0
Arkansas	15	2.5-4,000,000	0	0	0
Colorado	50	45,247,259	516,240	0	0
Connecticut	10	0	0	55,000	0
Georgia	7	0	300,000	0	0
Idaho	3	1,235,000	0	0	0
Illinois	32 ¹	3,500,000 ¹	958,855 ¹	5,428 ¹	0
Indiana	20	22,000,000	1,200,000	0	0
Iowa	12	32,000,000	0	190,000	0
Kansas	20	53,900,000	1,000,000	100,000	0
Kentucky	8	3,200,000	1,500,000	0	0
Maryland	3	425,000	200,000	0	0
Michigan	124	21,500,279	4,093,686	23,647	0
Minnesota	860	261,896,647	3,000,323	0	167,739 yearlings 19,656 adults
Mississippi	3	0	14,400	0	0
Missouri	?	2,000,000	0	5,000	0
Montana	21	40,590,000	5,052,293	16,702	0
Nebraska	36	11,493,000	1,507,343	37,466	0
Nevada	2	~3,000,000	0	0	0
New Jersey	6	0	200,000	40,000	0
New Mexico	5	15-20,000,000	0	0	0
New York	39	53,698,600	481,900	67,735	0
North Carolina	1	0	100,000	0	0
North Dakota	101	0	7,845,400	0	0
Ohio	15	0	1,800,000	0	0
Oklahoma	8	10,151,142	487,890	0	0
Pennsylvania	78 ¹	74,786,645 ²	662,580 ²	0	156 adults
South Dakota	69	45,939,485	1,322,458	137,746	18,600 juveniles
Tennessee	10	732,588	1,306,995	0	0
Texas	2	0	56,406	0	0
Vermont	3	2,563,000	186,500	0	0
Virginia	21	1,025,750 ¹	937,800	0	0
Washington	1	1,213,034	0	0	0
West Virginia	11	0	380,471	0	0
Wisconsin	185	17,304,290	3,272,428	128,486	0
Wyoming	10	0	730,000	0	0
United States	1,792	733,408,719	39,113,968	807,210	206,151
North America	1,989	828,300,182	39,825,838	859,857	206,613

¹ 2007 value.² 1998-2005 average

Table 2. Types of North American waters stocked with walleye in 2006

Province/State	No. of Waters Stocked with Walleye				Total
	Lakes	Reservoirs	Rivers/Streams	Unknown	
Alberta	4	0	0	0	4
Manitoba	40	5	2	0	47
Ontario	52	0	0	0	52
Québec	6	0	0	0	6
Saskatchewan	74	14	0	0	88
Canada	176	19	2	0	197
Alabama	1	0	0	0	1
Arkansas	0	8	7	0	15
Colorado	50	0	0	0	50
Connecticut	10	0	0	0	10
Georgia	0	7	0	0	7
Idaho	0	3	0	0	3
Illinois	0 ¹	32 ¹	0 ¹	0 ¹	32 ¹
Indiana	6	12	2	0	20
Iowa	12	0	0	0	12
Kansas	0	20	0	0	20
Kentucky	0	6	2	0	8
Maryland	0	3	0	0	3
Michigan	113	5	6	0	124
Minnesota	860	0	0	0	860
Mississippi	0	2	1	0	3
Missouri	-	-	-	?	?
Montana	9	11	1	0	21
Nebraska	20	14	2	0	36
Nevada	0	2	0	0	2
New Jersey	0	5	1	0	6
New Mexico	0	5	0	0	5
New York	25	6	7	1	39
North Carolina	0	1	0	0	1
North Dakota	66	33	1	1 (pond)	101
Ohio	15	0	0	0	15
Oklahoma	8	0	0	0	8
Pennsylvania	55 ¹	4 ¹	15 ¹	4 (ponds) ¹	78 ¹
South Dakota	67	0	0	2 (ponds)	69
Tennessee	0	10	0	0	10
Texas	0	2	0	0	2
Vermont	0 ¹	1 ¹	2 ¹	0 ¹	3 ¹
Virginia	16	0	5	0	21
Washington	1	0	0	0	1
West Virginia	7	0	4	0	11
Wisconsin	174	0	11	0	185
Wyoming	0	10	0	0	10
United States	1,515	202	67	8	1,792
North America	1,691	221	69	8	1,989

¹ 2007 value

Fenton et al. (1996) reported that supplemental stocking was the most common walleye stocking objective in the late 1980s. While this may continue to be true for jurisdictions that have traditionally stocked walleye, 2006 results indicate that more agencies are using walleye to create and maintain artificial fisheries with little expectation of natural reproduction.

Walleye Stocking Criteria

Agencies were asked what factors were considered to determine if a particular waterbody was suitable for walleye stocking. A number of criteria were identified (Table 4). Many of these criteria have been identified as critical factors which influence stocking success (Santucci and Wahl 1993; Kampa and Jennings 1998; Quist et al. 2004). Favourable habitat conditions and an abundant supply of suitable forage were the most frequent responses.

Table 4. Criteria used by North American resource managers to determine if a waterbody was suitable for walleye stocking.

Criteria	Number of Responses
Availability of suitable forage	16
Suitable water quality and habitat conditions	14
Presence of potential predators/competitors	8
Previous stocking history (success/failure)	7
Public access	6
Potential for natural reproduction	6
Potential impact on resident biota	6
Size of waterbody (larger (e.g., > 1-200 ha) preferred)	6
Angler demand	4
Potential for emigration/escapement	4
Proximity to urban centers	3
Status of resident walleye population	3
Appropriate genetic strain being stocked	2
Consistency with approved lake management plan	2
Historical presence of walleye in waterbody	2
Commercial fishing on waterbody	1
Night fishing allowed	1

Life Stages of Walleye Stocked

Survival is generally related to the size of fish at stocking with the relative survival of walleye fingerlings often being significantly greater than for fry (Fielder 1992; Koppelman et al. 1992; Kampa and Jennings 1998).

Fry remain the most common life stage of walleye which is stocked in North America (Table 5). More jurisdictions are rearing walleye to the fingerling stage, however, when compared to earlier surveys. Respondents indicated that 40,685,695 fingerlings (summer and advanced combined) were stocked in 2006. The largest number of fingerlings stocked by any agency was 7.8 million fish. While many jurisdictions stock both fry and fingerlings, seven states reported that they currently stock only summer fingerlings.

Table 5. Life stages of walleye being reared and stocked in North America.

Walleye Life Stage	No. Jurisdictions
Fry only	6
Summer fingerling only	8
Advanced fingerling only	1
Fry and Summer Fingerling	17
Fry, Summer Fingerling and Advanced Fingerling	9

Stocking Frequency

Stocking frequency is believed to play a role in post-stocking survival. Fayram (2005) concluded that annual walleye stocking programs could interfere with the success of previously stocked walleye. Similarly, Li et al. (1996) found that stocking decreased the abundance of walleye age classes on either side of the stocked cohort. Laarman and Schneider (1986) concluded that returns from stocked walleye could be optimized by stocking every second or third year instead of annually.

Table 6. Frequency of walleye stocking in various North American jurisdictions. Two jurisdictions did not respond to this question.

Walleye Stocking Frequency	No. Jurisdictions
Annually	20
Alternate Years	6
Combination	13

In this survey, lakes and reservoirs having little or no natural walleye reproduction were the most common types of waters which were stocked on an annual basis. In waters where some natural reproduction was occurring, several jurisdictions stocked walleye every 2-3 years in order to avoid suppressing the strength of adjacent year classes of walleye.

Stocking Density

One of the questions posed in this survey involved a determination of what stocking densities were being used in various jurisdictions. There is evidence to suggest that post stocking survival may be density dependent and that stocking at high or low densities is not an effective strategy (Li et al. 1996; Fayram et al. 2005).

Reported stocking densities varied widely among different jurisdictions (Table 7). In several cases where fry stocking was conducted, availability of fish determined the stocking density. Few agencies have developed stocking guidelines for either eyed eggs, juveniles or adults. Six agencies reported that they did not have any specific guidelines regarding stocking densities for any life stage of walleye.

Table 7. Range in walleye stocking densities reported by North American jurisdictions. There were three non-respondents to this question.

Walleye Life Stage	Number of Responses	Range in Stocking Densities
Eyed eggs	1	5,000 eggs/ha
Fry	20	1,500 – 9,880 fish/ha
Fingerlings	26	11 – 865 fish/ha
Advanced Fingerlings	11	10 – 124 fish/ha
Juveniles	0	-
Adults	2	150-300 fish (waters 80-600 ha) 1 fish/3 ha (waters > 600 ha)

The majority of agencies reported stocking density in terms of fish/ha. One state expressed stocking rates in terms of fish/littoral ha. Several jurisdictions have stocking rates which varied according to the size of the waterbody. One agency had stocking rates which varied according to the management designation for a particular waterbody.

Time of Stocking

The availability of suitable food at the time of stocking has been identified as a factor influencing post-stocking survival (Fielder 1992; Quist et al. 2003; Peterson et al. 2006). Similarly, thermal stress, in terms the differential in temperature between holding water and the stocked waterbody, has also been related to elevated mortality (Santucci and Wahl 1993; Clapp et al. 1997).

Over the range where walleye stocking occurs in North America there is a large variation in terms of stocking date and associated water temperatures (Table 8).

Table 8 . Range in stocking dates and water temperatures in North American jurisdictions which stock walleye. There were fourteen non-respondents to this question.

Walleye Life Stage	Stocking Dates	Recipient Water Temperature (°C)
Fry	March-early June	10-22
Fingerling	April-mid August	16-29
Advanced Fingerling	July-mid December	9-24

Many jurisdictions time their stocking activities to coincide with peaks in forage abundance for young walleye. Several jurisdictions have guidelines which recommended tempering water if the temperature differential between holding and recipient water exceeded 5-10°C.

Stocking Techniques

There were eight non-respondents to this question. Basically, walleye were released in one of two manners: (i) off the shoreline at a boat ramp or access point, or (ii) transferred to a boat and released offshore.

Several recommendations were provided on release sites and stocking techniques. These included:

- Increase the number of release sites as the size and basin complexity of the waterbody increases.
- Scatter-plant fish to distribute them over as wide an area as possible.
- Avoid stocking rivers during periods of high water discharge.
- Select stocking sites which are low in predator abundance but high in forage.
- Commence stocking reservoirs at the upper (warmer) end and move release sites downstream as the water warms.
- Temper holding water if the temperature differs more than 5°C from the temperature of the recipient waterbody.

Factors which influenced the stocking method most commonly involved the availability of resources such as time and manpower.

Discussion

Walleye stocking as a management activity continues to expand in North America (Table 9). In 2006 there were 41 different states and provinces involved with walleye stocking programs and almost two thousand waters were stocked.

Table 9. A comparative summary of walleye stocking information collected during surveys of North American jurisdictions in 1984, 1991 and 2006.

	1984	1991	2006
Number of jurisdictions stocking walleye	10	32	41
Number of waters stocked with walleye	-	1,099	1,989
Number of walleye stocked in North America (millions)	1,095.9	1,180.4	869.2
Number of walleye fingerlings stocked (millions of fish)	21.9	32.3	40.7
Proportion of walleye stocked as fingerlings or older	< 2.0%	3.0%	4.7%

Despite this increase in participation, the total number of walleye stocked decreased in 2006 when compared to 1984 and 1991. There are several potential explanations for this observation. Very little walleye stocking was reported for the Great Lakes. In previous years, several restoration projects, involving large numbers of fish, were underway in the Great Lakes. The decline in the total number of walleye stocked may also be attributed to the fact that more agencies are rearing fingerlings instead of fry. This is reflected by the proportion of walleye stocked as fingerling or older fish.

While stocking fry remains appealing from an economic perspective, there seems to be a trend to stock older, larger fish. Almost five percent of walleye stocking in 2006 consisted of life stages older than fry. These results support an earlier observation by Fenton et al. (1996) that there continues to be a gradual shift to fingerling stocking over fry stocking.

Despite the fact that walleye have been stocked in North America for over one hundred years, walleye stocking success often continues to be unpredictable. There is, however, every indication that walleye stocking activities will continue to increase in the future. Several agencies indicated that their walleye culture and stocking programs would be expanded. Future surveys will be required to monitor the role of walleye stocking as a management activity in North America.

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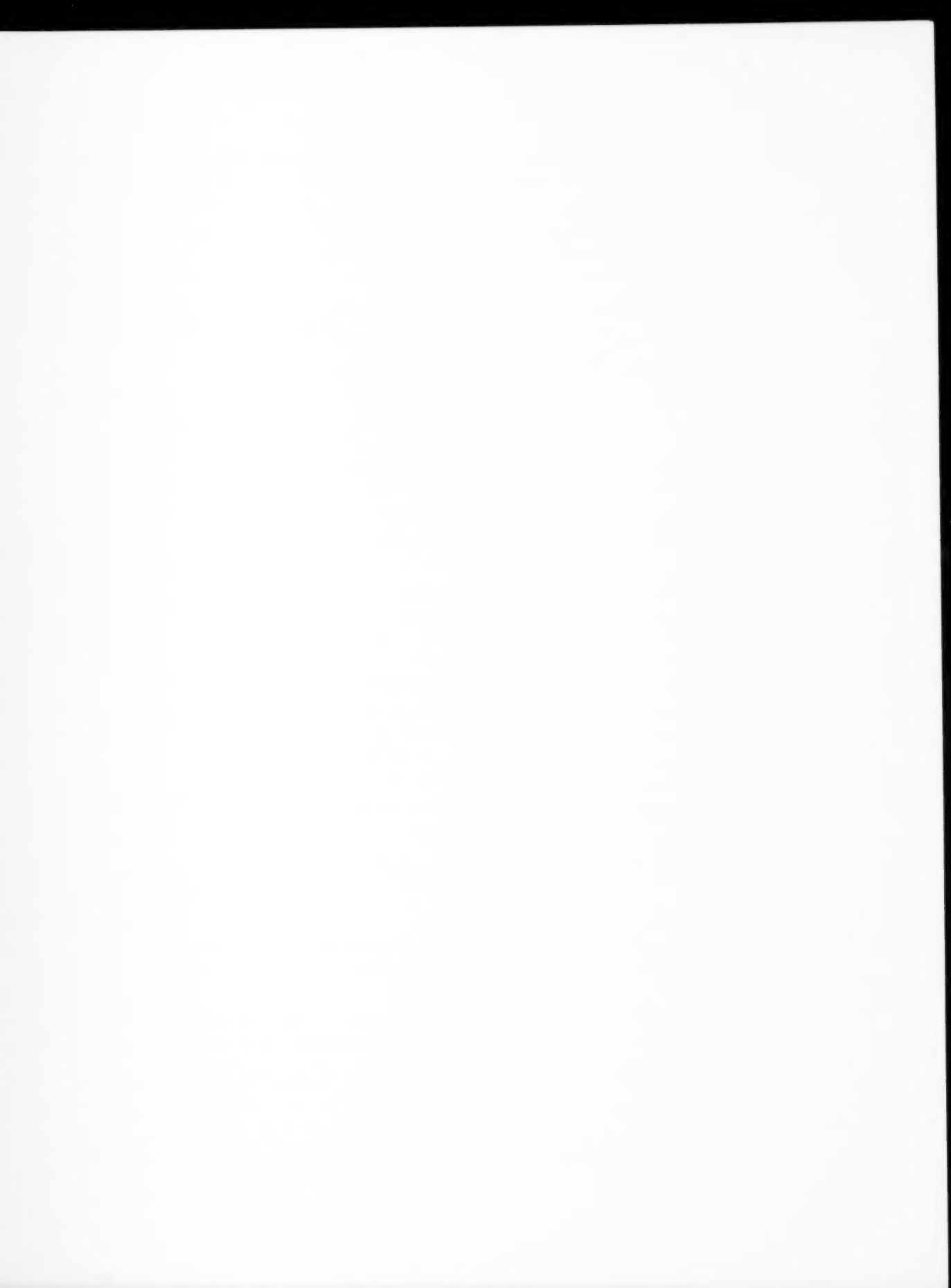
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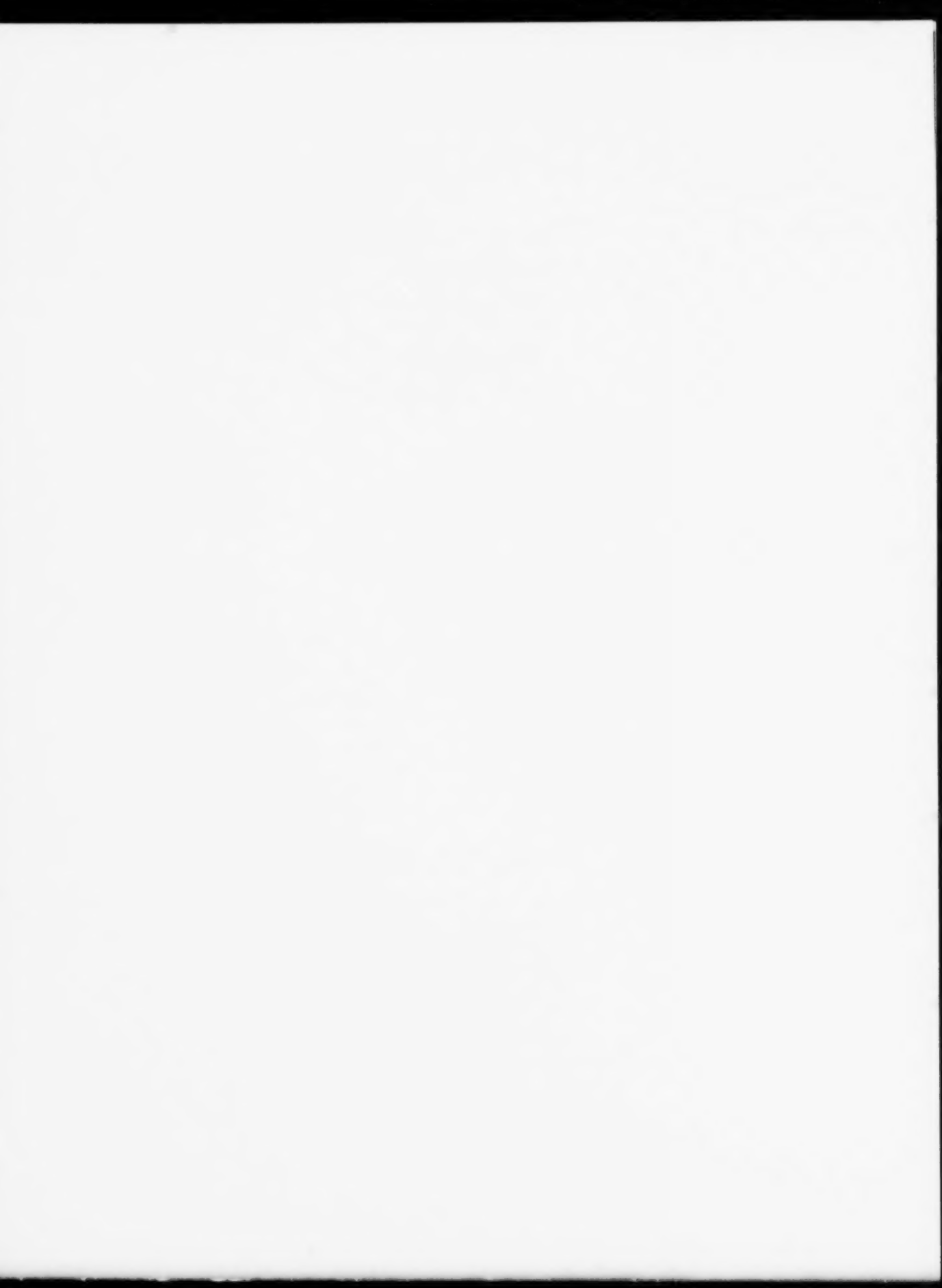
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Appendices



Appendix 1. Number of walleye stocked in North American jurisdictions during 2006.

Jurisdiction	Number of Walleye Stocked
Alabama	<ul style="list-style-type: none">• 7,000 'southern' walleye fingerlings stocked in 2006.
Alberta	<ul style="list-style-type: none">• 24,400,000 walleye fry and 425,930 fingerlings stocked in 2007.
Arkansas	<ul style="list-style-type: none">• 2.5-4.0 million fry stocked annually in 12-14 waters.
Colorado	<ul style="list-style-type: none">• 45,247,259 fry and 516,240 fingerlings stocked in 2006.
Connecticut	<ul style="list-style-type: none">• 55,000 advanced walleye fingerlings stocked.
Georgia	<ul style="list-style-type: none">• New program currently consists of approximately 300,000 fingerlings to stock annually.
Idaho	<ul style="list-style-type: none">• A total of 1,235,000 fry were stocked in 2006.
Illinois	<ul style="list-style-type: none">• 3,500,000 fry, 958,855 summer fingerlings and 5,428 advanced fingerlings were stocked in 2007.
Indiana	<ul style="list-style-type: none">• Approximately 22 million fry, 1.2 million fingerlings and 40,000 hybrid fingerlings were stocked
Iowa	<ul style="list-style-type: none">• 32 million fry and 190,000 advanced fingerlings were stocked in 2006.
Kansas	<ul style="list-style-type: none">• Over 55 million fish stocked in 2006. This includes approximately 1.0 million summer fingerlings and 100,000 advanced fingerlings.
Kentucky	<ul style="list-style-type: none">• 3.2 million walleye fry and 1.5 million summer fingerlings stocked in 2006.
Manitoba	<ul style="list-style-type: none">• 27,850,000 fry stocked in 2006.
Maryland	<ul style="list-style-type: none">• 425,000 fry and 200,000 fingerlings stocked in 2006.
Michigan	<ul style="list-style-type: none">• 21,500,279 fry, 4,093,686 summer fingerlings and 23,647 advanced fingerlings stocked in 2006.
Minnesota	<ul style="list-style-type: none">• 261,896,647 fry, 3,000,323 fingerlings, 167,739 yearlings and 19,656 adults stocked in 2006.
Mississippi	<ul style="list-style-type: none">• 14,400 summer fingerlings stocked in 2006
Missouri	<ul style="list-style-type: none">• Two million fry and 5,000 advanced fingerlings stocked in 2006.
Montana	<ul style="list-style-type: none">• 40,590,000 fry, 5,052,293 summer fingerlings and 16,702 advanced fingerlings stocked in 2006.
Nebraska	<ul style="list-style-type: none">• 11,493,000 fry, 1,507,343 summer fingerlings, and 37,466 advanced fingerlings stocked in 2006.
Nevada	<ul style="list-style-type: none">• Approximately 3 million fry stocked in two waters in 2006.

Jurisdiction	Number of Walleye Stocked
New Jersey	<ul style="list-style-type: none"> • 200,000 summer (pond-reared) fingerlings and 40,000 advanced fingerlings stocked.
New Mexico	<ul style="list-style-type: none"> • 15-20 million fry stocked annually.
New York	<ul style="list-style-type: none"> • 53,698,600 fry, 481,900 summer fingerlings and 67,735 advanced fingerlings stocked in 2006.
North Carolina	<ul style="list-style-type: none"> • 100,000 fingerling walleye stocked in one reservoir in 2006.
North Dakota	<ul style="list-style-type: none"> • 7,845,400 summer fingerling walleye stocked in 2006.
Ohio	<ul style="list-style-type: none"> • 1,800,000 fingerling walleye were stocked in 2006.
Oklahoma	<ul style="list-style-type: none"> • 10,151,142 fry and 487,890 fingerlings were stocked in 2006.
Ontario	<ul style="list-style-type: none"> • 1,376,463 fry, 234,640 fingerlings, 52,647 advanced fingerlings and 462 adults stocked (total of 1,664,212 fish) in 2006. • Walleye stocked by both MNR and partner groups.
Pennsylvania	<ul style="list-style-type: none"> • An average of 74,786,645 fry and 662,580 fingerlings were stocked between 1998-2005 (inclusive).
Québec	<ul style="list-style-type: none"> • 1,000,000 walleye fry and 700 fingerlings were stocked in 2006.
Saskatchewan	<ul style="list-style-type: none"> • 40,265,000 fry and 50,600 fingerlings stocked.
South Dakota	<ul style="list-style-type: none"> • 45,939,485 fry, 1,322,458 summer fingerlings, 137,746 advanced (large) fingerlings and 18,600 juvenile walleye stocked in 2006.
Tennessee	<ul style="list-style-type: none"> • 1,306,995 fingerling walleye and 732,588 fry stocked in 2006.
Texas	<ul style="list-style-type: none"> • 56,406 walleye fingerlings stocked in two reservoirs in 2006.
Vermont	<ul style="list-style-type: none"> • 2,563,000 fry and 186,500 summer fingerlings stocked.
Virginia	<ul style="list-style-type: none"> • 1,025,750 walleye fry and 937,800 fingerlings stocked in 2006.
Washington	<ul style="list-style-type: none"> • 1,213,034 fry stocked in one lake in 2006.
West Virginia	<ul style="list-style-type: none"> • 51,471 native walleye fingerlings were stocked in 4 rivers during 2006. • Approximately 329,000 walleye fingerlings stocked in seven lakes in 2006.
Wisconsin	<ul style="list-style-type: none"> • 17,304,290 fry, 3,272,428 summer fingerlings, and 128,486 advanced fingerlings stocked in 2006.
Wyoming	<ul style="list-style-type: none"> • Approximately 730,000 fingerlings stocked in 10 waters in 2006.

Appendix 2. North American Waters Stocked with Walleye in 2006.

Jurisdiction	Number of Waters Stocked with Walleye
Alabama	<ul style="list-style-type: none">• One lake (Lake Mitchell).
Alberta	<ul style="list-style-type: none">• A small number of large lakes predominantly in the southern and central portion of the province.• Four lakes were stocked in 2007.
Arkansas	<ul style="list-style-type: none">• Eight reservoirs and 7 rivers stocked in 2006.
Colorado	<ul style="list-style-type: none">• Reservoirs and lakes averaging 2-3,000 acres (809 – 1,214 ha) in size.• Fifty different waters stocked in 2006
Connecticut	<ul style="list-style-type: none">• Predominantly lakes although there is one lake which is riverine in nature.• Ten lakes were stocked in 2006.
Georgia	<ul style="list-style-type: none">• Seven reservoirs (mostly in northern part of state) stocked in 2006.
Idaho	<ul style="list-style-type: none">• Three reservoirs stocked in 2006.
Illinois	<ul style="list-style-type: none">• Thirty-two reservoirs and impoundments stocked in 2007.
Indiana	<ul style="list-style-type: none">• Twelve impoundments, six lakes and two rivers.
Iowa	<ul style="list-style-type: none">• Six lakes, 12 reservoirs and two large rivers stocked in 2006.
Kansas	<ul style="list-style-type: none">• Twenty reservoirs stocked in 2006.
Kentucky	<ul style="list-style-type: none">• Six reservoirs and two rivers stocked in 2006.
Manitoba	<ul style="list-style-type: none">• Lakes which are periodically winterkilled.• Some large commercially fished lakes (Lake Manitoba).• Forty lakes, five reservoirs and two rivers stocked in 2006.
Maryland	<ul style="list-style-type: none">• Three reservoirs stocked in 2006.• The Potomac River has also been stocked with walleye.
Michigan	<ul style="list-style-type: none">• 113 lakes, five reservoirs and six rivers stocked in 2006.• Lake Superior and Michigan have also been stocked with walleye.
Minnesota	<ul style="list-style-type: none">• Approximately 860 Minnesota lakes were stocked with walleye in 2006.
Mississippi	<ul style="list-style-type: none">• Two reservoirs and one river stocked in 2006.
Missouri	<ul style="list-style-type: none">• Reservoirs and streams.
Montana	<ul style="list-style-type: none">• Eleven reservoirs, nine lakes and one river were stocked with walleye in 2006.

Jurisdiction	Number of Waters Stocked with Walleye
Nebraska	<ul style="list-style-type: none"> • A variety of waters. Most are reservoirs but natural lakes, and gravel pits are also stocked with walleye. • Stocked waters range in size from a few acres to almost 30,000 acres. • Twenty lakes, fourteen reservoirs and two rivers were stocked with walleye in 2006.
Nevada	<ul style="list-style-type: none"> • Two large irrigation reservoirs were stocked with walleye in 2006.
New Jersey	<ul style="list-style-type: none"> • Five large impoundments and one large river (Delaware River) were stocked in 2006.
New Mexico	<ul style="list-style-type: none"> • All reservoirs. • 5 reservoirs were stocked in 2006.
New York	<ul style="list-style-type: none"> • Twenty-five inland lakes, six reservoirs, seven rivers and one unknown waterbody were stocked with walleye in 2006.
North Carolina	<ul style="list-style-type: none"> • One reservoir was stocked with walleye in 2006.
North Dakota	<ul style="list-style-type: none"> • All types of waters even some that would not have any natural reproduction. • In 2006, 66 lakes, 33 reservoirs, 1 river and 1 pond were stocked with walleye.
Ohio	<ul style="list-style-type: none"> • Reservoirs and tailwaters of large rivers. • Fifteen waters were stocked with walleye in 2006.
Oklahoma	<ul style="list-style-type: none"> • Eight different lakes were stocked with walleye in 2006.
Ontario	<ul style="list-style-type: none"> • Fifty-two inland lakes, predominantly on the Canadian Shield, were stocked with walleye in 2006.
Pennsylvania	<ul style="list-style-type: none"> • Fifty-five lakes, fifteen rivers, four ponds and four reservoirs were stocked with walleye in 2007.
Québec	<ul style="list-style-type: none"> • Six inland lakes stocked in 2006.
Saskatchewan	<ul style="list-style-type: none"> • Winterkill lakes or lakes with little or no natural reproduction. • Seventy-four lakes and fourteen reservoirs were stocked with walleye in 2006.
South Dakota	<ul style="list-style-type: none"> • Winterkill lakes and small impoundments (< 60 ha). Streams and rivers are not stocked. • Sixty-seven lakes and two ponds were stocked with walleye in 2006.
Tennessee	<ul style="list-style-type: none"> • Ten tributary reservoirs were stocked with walleye in 2006.
Texas	<ul style="list-style-type: none"> • Two reservoirs were stocked with walleye in 2006.
Vermont	<ul style="list-style-type: none"> • One reservoir and two rivers were stocked with walleye in 2006. • Lake Champlain has also been stocked with walleye.

Jurisdiction	Number of Waters Stocked with Walleye
Virginia	<ul style="list-style-type: none"> • Sixteen lakes and five rivers were stocked with walleye in 2006.
Washington	<ul style="list-style-type: none"> • Lowland (< 610 m in elevation) lakes and reservoirs. • One lake was stocked with walleye in 2006.
West Virginia	<ul style="list-style-type: none"> • Seven lakes and four rivers were stocked with walleye in 2006.
Wisconsin	<ul style="list-style-type: none"> • 174 inland lakes and 11 rivers were stocked with walleye in 2006. • Lake Superior and Lake Michigan have been stocked with walleye in the past.
Wyoming	<ul style="list-style-type: none"> • Ten reservoirs were stocked with walleye in 2006.

Appendix 3. Criteria for selecting waters to be stocked with walleye.

Jurisdiction	Considerations for Walleye Stocking
Alabama	<ul style="list-style-type: none">• The unique southern strain of walleye will only be stocked at historical locations.
Alberta	<ul style="list-style-type: none">• Suitable habitat conditions (e.g., dissolved oxygen, spawning habitat, etc.)• Available forage.• Proximity to urban centers.• Previous stocking history (i.e., success, failures)
Arkansas	-
Colorado	-
Connecticut	<ul style="list-style-type: none">• Waterbodies must exceed 100 acres (40.5 ha) in size.• Few potential predators (e.g., chain pickerel, largemouth bass and smallmouth bass).• Abundant forage base.• Good fishing access.• Stocking does not interfere with trout or Atlantic salmon management projects.
Georgia	<ul style="list-style-type: none">• Suitable pelagic forage (e.g., blueback herring).• Suitable summer water quality (e.g., metalimnion temperature < 25°C and dissolved oxygen > 4 mg/l).
Idaho	<ul style="list-style-type: none">• Stocked waters must have closed basins so that there is little chance of walleye moving into waters that have anadromous fish.• Forage availability (i.e., gizzard shad).
Illinois	<ul style="list-style-type: none">• Lake/reservoir must be at least 8.1 ha in size.• Limited escapement potential.• Adequate forage base (e.g., gizzard shad, bluegill, yellow perch, yellow bass).
Indiana	<ul style="list-style-type: none">• Hydraulic retention time of less than 0.5.• Public access.• Appropriate genetic strain.• Past walleye stocking success.
Iowa	<ul style="list-style-type: none">• Fingerlings are only stocked in waterbodies exceeding 500 acres (202 ha) in size.• Restrictions on inter-watershed movement of walleye.
Kansas	<ul style="list-style-type: none">• Priority system is used which takes into account factors such as suitable habitat conditions, flow rates, and potential for walleye escapement downstream.
Kentucky	<ul style="list-style-type: none">• Suitable coolwater habitat defined as well oxygenated (>4 mg/L) with water temperatures < 24°C during the summer growing season.

Jurisdiction	Considerations for Walleye Stocking
Manitoba	<ul style="list-style-type: none"> • Trout not present. • Sufficient angling pressure.
Maryland	<ul style="list-style-type: none"> • Availability of suitable forage. • Presence of predators. • Available niche for walleye.
Michigan	<ul style="list-style-type: none"> • Suitable water clarity. • Resident fish community composition.
Minnesota	<ul style="list-style-type: none"> • Adequate forage. • Resident fish community composition (predators and competitors). • Potential for natural reproduction. • Suitable limnological parameters. • Harvest pressure justifies the cost. • An approved lake management plan. • Success/failure of previous stocking efforts.
Mississippi	<ul style="list-style-type: none"> • Historical presence of walleye.
Missouri	<ul style="list-style-type: none"> • Previous stocking success. • Geographic location in the state.
Montana	<ul style="list-style-type: none"> • Potential impacts on resident fish species (walleye are not a native species in Montana). • Availability of sufficient forage. • Presence of potential spawning habitat.
Nebraska	<ul style="list-style-type: none"> • No established criteria.
Nevada	<ul style="list-style-type: none"> • Historical stocking sites.
New Jersey	<ul style="list-style-type: none"> • Relatively deep lakes greater than 100 ha in surface area. • Summer weekly water temperatures ranging from 20-24°C. • Dissolved oxygen levels > 5.5 mg/l. • Presence of forage (e.g., alewife, yellow perch). • Walleye stocking is prohibited in trophy trout lakes.
New Mexico	<ul style="list-style-type: none"> • Historical stocking sites with established fisheries.
New York	<ul style="list-style-type: none"> • Presence of predatory fish such as bass and pike. • Public access.
North Carolina	
North Dakota	<ul style="list-style-type: none"> • Public access. • Susceptibility to winter/summer kill. • Angler demand. • Good water quality and habitat.
Ohio	<ul style="list-style-type: none"> • Good prey base (e.g., gizzard shad). • Productivity of waterbody.

Jurisdiction	Considerations for Walleye Stocking
Oklahoma	<ul style="list-style-type: none"> • Water exchange rate, presence of shad for forage, abundance of predators (e.g., largemouth bass), water clarity, presence of spawning and nursery habitat, status of existing walleye reproduction, and lake size are all used in a waterbody suitability rating system.
Ontario	<ul style="list-style-type: none"> • Adequate forage. • Presence and relative abundance of predators and competitors. • Low water clarity. • Suitable water quality. • Availability of spawning habitat.
Pennsylvania	<ul style="list-style-type: none"> • Ecological impacts of stocking on the resident fish community. • Availability of suitable forage. • Completion of fisheries management plan for the waterbody.
Québec	<ul style="list-style-type: none"> • Levels of competition and predation from other species should be low to nil.
Saskatchewan	<ul style="list-style-type: none"> • Public access. • Lakes capable of supporting fish (not consistently winter-killed). • No commercial activity on lake (e.g., commercial fisheries, tourist camps, etc.).
South Dakota	<ul style="list-style-type: none"> • No specific criteria.
Tennessee	<ul style="list-style-type: none"> • Forage availability. • Previous stocking success.
Texas	<ul style="list-style-type: none"> • Proximity to metropolitan areas. • High probability for natural reproduction. • Waters where walleye are present but have inadequate recruitment.
Vermont	<ul style="list-style-type: none"> • Status of resident walleye population. • Angling pressure. • Environmental factors which would support natural reproduction.
Virginia	<ul style="list-style-type: none"> • Other fish species in the recipient waterbody. • Availability of forage. • Whether night fishing is allowed.
Washington	<ul style="list-style-type: none"> • Size of waterbody (larger waters preferred). • Accessibility. • Prey abundance. • No negative impact on resident species. • Good potential for survival and growth.
West Virginia	<ul style="list-style-type: none"> • Past stocking history (e.g., successes or failures).
Wisconsin	<ul style="list-style-type: none"> • Low water clarity.
Wyoming	<ul style="list-style-type: none"> • Presence of a naturally reproducing walleye population. Wyoming does not stock walleye on a supplemental basis.

Appendix 4. Purpose of walleye stocking programs in various North American jurisdictions.

Jurisdiction	Walleye Stocking Purpose
Alabama	<ul style="list-style-type: none">• Restoration of southern walleye to historical waterways.
Alberta	<ul style="list-style-type: none">• Rehabilitation and re-introductions.
Arkansas	<ul style="list-style-type: none">• Maintain walleye fisheries because of limited natural reproduction and high exploitation.
Colorado	-
Connecticut	<ul style="list-style-type: none">• Mostly to develop an artificial (i.e., put-grow-take) walleye fishery since there is no natural reproduction.• Predatory control of abundant panfish.
Georgia	<ul style="list-style-type: none">• Biological control of blueback herring in mountain reservoirs.• Create and diversify recreational fisheries.
Idaho	<ul style="list-style-type: none">• To diversify angling opportunities (walleye are not native to Idaho).
Illinois	<ul style="list-style-type: none">• Diversify and increase angling opportunities.• Satisfy angler demand for coolwater fish.• Enhance predator densities to take advantage of prey species.
Indiana	<ul style="list-style-type: none">• Creating and improving walleye fisheries (very limited natural reproduction of walleye in Indiana).
Iowa	<ul style="list-style-type: none">• Reintroduction to winterkill waters.• Maintenance (natural reproduction is extremely limited).• To enhance genetic integrity.
Kansas	<ul style="list-style-type: none">• Create or maintain recreational fisheries.
Kentucky	<ul style="list-style-type: none">• Provide artificial (put-grow-take) fisheries due to very limited natural reproduction.
Manitoba	<ul style="list-style-type: none">• To diversify local fisheries.• To create or maintain fisheries.• Few introductions.
Maryland	<ul style="list-style-type: none">• Provision of recreational fisheries.
Michigan	<ul style="list-style-type: none">• Rehabilitation in the Great Lakes.• Artificial (inland).• To manage/control panfish populations.• No stocking is done if there is natural reproduction of walleye.
Minnesota	<ul style="list-style-type: none">• Maintain or increase healthy walleye populations.• No stocking is done if there is natural reproduction of walleye.

Jurisdiction	Walleye Stocking Purpose
Mississippi	<ul style="list-style-type: none"> • To restore historic riverine fisheries. • To develop broodstock sources (small impoundments).
Missouri	<ul style="list-style-type: none"> • To provide recreational fisheries.
Montana	<ul style="list-style-type: none"> • To create and provide recreational fisheries.
Nebraska	<ul style="list-style-type: none"> • Supplement natural recruitment. • Provision of artificial fishing opportunities. • Predatory control of undesirable species or overabundant prey fish.
Nevada	<ul style="list-style-type: none"> • Create and maintain recreational fisheries as there is little, if any natural reproduction.
New Jersey	<ul style="list-style-type: none"> • To provide desirable walleye fishing opportunities in suitable waters throughout the state.
New Mexico	<ul style="list-style-type: none"> • Maintain existing fisheries since there is limited natural reproduction.
New York	<ul style="list-style-type: none"> • Restoration. • Introductions. • Artificial.
North Carolina	<ul style="list-style-type: none"> • Maintain a walleye fishery in decline since the introduction of blueback herring.
North Dakota	<ul style="list-style-type: none"> • Maintenance of recreational fisheries since there is little natural reproduction.
Ohio	<ul style="list-style-type: none"> • Creation of fisheries.
Oklahoma	<ul style="list-style-type: none"> • Creation of fisheries.
Ontario	<ul style="list-style-type: none"> • Rehabilitation, introductions and artificial. • Supplemental stocking of walleye is discouraged.
Pennsylvania	<ul style="list-style-type: none"> • Provision of angling opportunities and maximizing angler use while managing harvest within ecological constraints.
Québec	<ul style="list-style-type: none"> • Introductions and maintenance. • Artificial (PGT) stocking is not recommended.
Saskatchewan	<ul style="list-style-type: none"> • Creation of artificial fisheries (put-grow-take).
South Dakota	<ul style="list-style-type: none"> • Re-introduction of walleye into winter kill lakes. • Maintenance stocking into marginal waters having little or no natural reproduction. • Supplemental stocking to enhance the quality of the fishery.
Tennessee	<ul style="list-style-type: none"> • Create and maintain hatchery-dependent recreational fisheries since there is little or no natural reproduction.

Jurisdiction	Walleye Stocking Purpose
Texas	<ul style="list-style-type: none"> • Provide an additional sport fishery where walleye can be successfully established and have at least some natural reproduction.
Vermont	<ul style="list-style-type: none"> • Enhance the existing walleye population in Lake Champlain. • Develop self-sustaining walleye populations.
Virginia	<ul style="list-style-type: none"> • Supplement natural stocks where reproduction is inadequate. • Manipulation of the forage base. • Introduce walleye to new waters. • Create and maintain recreational fisheries.
Washington	<ul style="list-style-type: none"> • Supplemental stocking to create and sustain recreational fisheries with some natural reproduction. • Develop warmwater culture expertise. • Walleye are not native to Washington.
West Virginia	<ul style="list-style-type: none"> • Restoration of species that were eliminated because of pollution and habitat alteration. • Establish self-sustaining fisheries. • Maintenance in reservoirs.
Wisconsin	<ul style="list-style-type: none"> • Rehabilitation, research and maintenance.
Wyoming	<ul style="list-style-type: none"> • To create and maintain reservoir fisheries where there is little or no natural reproduction.

Appendix 5. Life stage(s) of walleye stocked in North America.

Jurisdiction	Walleye Life Stage Stocked
Alabama	<ul style="list-style-type: none">• Small fingerlings.
Alberta	<ul style="list-style-type: none">• Mostly fry but some summer fingerlings.
Arkansas	<ul style="list-style-type: none">• Fry and summer fingerlings.
Colorado	<ul style="list-style-type: none">• Fry and summer fingerlings.
Connecticut	<ul style="list-style-type: none">• Only advanced fingerlings which are stocked at a size of 4-6 inches in the fall.
Georgia	<ul style="list-style-type: none">• Summer fingerlings.
Idaho	<ul style="list-style-type: none">• Only fry.
Illinois	<ul style="list-style-type: none">• Fry, fingerlings and advanced fingerlings.
Indiana	<ul style="list-style-type: none">• Fry, summer fingerlings and advanced (fall) fingerlings.
Iowa	<ul style="list-style-type: none">• Predominantly fry – advanced fingerlings are stocked only after poor success with fry.
Kansas	<ul style="list-style-type: none">• Fry (majority), summer fingerlings and advanced fingerlings.
Kentucky	<ul style="list-style-type: none">• Summer fingerlings and fry (excess from raising fingerlings).
Manitoba	<ul style="list-style-type: none">• Almost entirely (>95%) fry but some summer fingerlings.
Maryland	<ul style="list-style-type: none">• Fry and fingerlings.
Michigan	<ul style="list-style-type: none">• Fry stocking limited to turbid waters. Advanced fingerlings only stocked for research purposes.
Minnesota	<ul style="list-style-type: none">• Fry, summer fingerlings and advanced fingerlings.
Mississippi	<ul style="list-style-type: none">• Fry and summer fingerlings.
Missouri	<ul style="list-style-type: none">• Predominantly summer fingerlings.• Some advanced fingerlings.• Surplus fry when available.
Montana	<ul style="list-style-type: none">• Fry and small fingerlings.
Nebraska	<ul style="list-style-type: none">• Fry (five days old).• Summer fingerlings (40 days old).• A lesser amount of advanced fingerlings (~ 8 inches long).

Jurisdiction	Walleye Life Stage Stocked
Nevada	<ul style="list-style-type: none"> • Fry.
New Jersey	<ul style="list-style-type: none"> • Summer (pond-reared) fingerlings. • Advanced fingerlings. • Fry are not stocked.
New Mexico	<ul style="list-style-type: none"> • Fry.
New York	<ul style="list-style-type: none"> • Fry and fingerlings stocked. • Summer and fall fingerlings are stocked depending on the species and size structure of the resident fish community.
North Carolina	<ul style="list-style-type: none"> • Summer fingerlings.
North Dakota	<ul style="list-style-type: none"> • Summer fingerlings.
Ohio	<ul style="list-style-type: none"> • Fry and summer fingerlings.
Oklahoma	<ul style="list-style-type: none"> • Fry and summer fingerlings.
Ontario	<ul style="list-style-type: none"> • Fry for introductions and rehabilitation in waters having relatively simple fish communities. • Summer fingerlings are the most common life stage stocked. • Advanced (fall) fingerlings used in waters having complex fish communities. • Subadults and adults often used for introductions.
Pennsylvania	<ul style="list-style-type: none"> • Fry and summer fingerlings.
Québec	<ul style="list-style-type: none"> • Fry and fingerlings.
Saskatchewan	<ul style="list-style-type: none"> • Mostly (90%) fry. • Some summer fingerlings.
South Dakota	<ul style="list-style-type: none"> • Fry, summer fingerlings and advanced fingerlings.
Tennessee	<ul style="list-style-type: none"> • Summer fingerlings are the target life stage. • Surplus walleye are stocked as fry.
Texas	<ul style="list-style-type: none"> • Fry and fingerlings.
Vermont	<ul style="list-style-type: none"> • Some fry but predominantly fingerlings.
Virginia	<ul style="list-style-type: none"> • Summer fingerlings are the mainstay of the stocking program. • Some fry are stocked if there are surplus fish available.
Washington	<ul style="list-style-type: none"> • Fry. • Interested in raising fall fingerlings in the future.

Jurisdiction	Walleye Life Stage Stocked
West Virginia	<ul style="list-style-type: none">• Summer fingerlings.• No longer stock fry.
Wisconsin	<ul style="list-style-type: none">• Fry stocking in winterkill lakes.• Summer fingerlings are the most common life stage stocked.• Advanced (fall) fingerlings are stocked in waters having complex fish communities.
Wyoming	<ul style="list-style-type: none">• Fry stocking has been discontinued. Wyoming currently stocks only fingerlings.

Appendix 6. Walleye stocking frequency in various North American jurisdictions.

Jurisdiction	Stocking Frequency
Alabama	<ul style="list-style-type: none">• Annually as fish survival permits.
Alberta	<ul style="list-style-type: none">• Annually.
Arkansas	<ul style="list-style-type: none">• Annually.• Some stocking on a 2 or 3 year basis.
Colorado	<ul style="list-style-type: none">• Annually.
Connecticut	<ul style="list-style-type: none">• Annually.
Georgia	<ul style="list-style-type: none">• Annually as there is very little natural reproduction.
Idaho	<ul style="list-style-type: none">• Annually when fry are available.
Illinois	<ul style="list-style-type: none">• Reservoirs and impoundments are stocked annually since there is little or no reproduction.• Rivers are often stocked periodically to augment natural reproduction.
Indiana	<ul style="list-style-type: none">• Annually.
Iowa	
Kansas	<ul style="list-style-type: none">• Annually in waters with poor reproduction.• Alternate years in waters with some natural reproduction.
Kentucky	<ul style="list-style-type: none">• Annually.
Manitoba	<ul style="list-style-type: none">• Mostly on an annual basis.• Some alternate year stocking (depending on supply)
Maryland	<ul style="list-style-type: none">• Alternate years due to low number of fingerlings produced.
Michigan	<ul style="list-style-type: none">• Every 2-3 years.
Minnesota	<ul style="list-style-type: none">• Every 2-3 year in order to avoid year class suppression.
Mississippi	<ul style="list-style-type: none">• Alternate years.
Missouri	<ul style="list-style-type: none">• Varies from annually to every third year.
Montana	<ul style="list-style-type: none">• Mostly annual (in waters having little or no natural reproduction).

Jurisdiction	Stocking Frequency
Nebraska	<ul style="list-style-type: none"> • Most waters are stocked annually. • Some lower priority waters are only stocked when fish are available (e.g., every 2-5 years).
Nevada	<ul style="list-style-type: none"> • Annually. • Alternate years if water levels are low in reservoirs.
New Jersey	<ul style="list-style-type: none"> • All waters are stocked annually as there is very little natural reproduction.
New Mexico	<ul style="list-style-type: none"> • Annually.
New York	<ul style="list-style-type: none"> • Annually for a period of five years.
North Carolina	<ul style="list-style-type: none"> • Annually.
North Dakota	<ul style="list-style-type: none"> • Annually but some waters are stocked in alternate years.
Ohio	<ul style="list-style-type: none"> • Annually.
Oklahoma	-
Ontario	<ul style="list-style-type: none"> • Annually for 2-3 years in rehabilitation stocking. • Every 2-3 years for artificial stocking. • Adult transfers are conducted for 1-2 years for introductions.
Pennsylvania	<ul style="list-style-type: none"> • Typically on an annual basis.
Québec	<ul style="list-style-type: none"> • Fry should be stocked annually for three years. • Adults should be stocked until the prescribed number of fish is reached (maximum of 400 fish).
Saskatchewan	<ul style="list-style-type: none"> • Annually and alternate years.
South Dakota	<ul style="list-style-type: none"> • After a winterkill and every 1-3 years for waters with other stocking objectives.
Tennessee	<ul style="list-style-type: none"> • Annually.
Texas	<ul style="list-style-type: none"> • Usually annually.
Vermont	<ul style="list-style-type: none"> • Lake Champlain is stocked annually. • Other inland waters are stocked on alternate years.
Virginia	<ul style="list-style-type: none"> • Priority impoundments are stocked annually. • Other impoundments may be stocked on a staggered schedule. • New impoundments should be stocked annually for a minimum of five years to establish a population.

Jurisdiction	Stocking Frequency
Washington	<ul style="list-style-type: none">• Annually or alternate years depending on the waterbody.
West Virginia	<ul style="list-style-type: none">• Alternate years.
Wisconsin	<ul style="list-style-type: none">• Both annual and alternate years – alternate years for fingerlings.
Wyoming	<ul style="list-style-type: none">• Annually in most cases but it depends on the availability of walleye (received from North Dakota). If insufficient walleye are available waters to be stocked are prioritized.

Appendix 7. Walleye stocking densities utilized in various North American jurisdictions.

Jurisdiction	Eyed Eggs	<u>Stocking Density (fish/ha)</u>		
		Fry	Summer Fingerlings	Advanced Fingerlings
Alabama	-	-	-	-
Alberta	-	~1,500 fish/ha	-	-
Arkansas	-	-	-	-
Colorado	-	3,700-7,400 fish/ha	25-74 fish/ha	-
Connecticut	-	-	-	20-37 fish/ha
Georgia	-	-	49-124 fish/ha	-
Idaho	-	Considerable variation	-	-
Illinois	-	2,479 fish/ha (impoundments)	90-124 fish/ha (impoundments > 40 ha); 62 fish/ha (rivers and impoundments < 40 ha)	-
Indiana	-	7,400 fish/ha	250 fish/ha (124 hybrids/ha)	11.9-50.0 fish/ha*
Iowa	-	2,470-9,880 fish/ha	37 fish/ha (250 fish/km river)	25-74 fish/ha
Kansas	-	2,471-7,413 fish/ha	124-247 fish/ha (introductions); 62-124 fish/ha (maintenance)	-
Kentucky	-	No consistent rate	124 fish/ha (18.5 fish/ha in Lake Cumberland)	-
Manitoba	-	-	-	-
Maryland	-	No established rate – based on fish availability	No established rate – based on fish availability	-

Jurisdiction	Eyed Eggs	Fry	Summer Fingerlings	Advanced Fingerlings
Michigan	-	4,490 fish/ha	62-247 fish/ha	25-99 fish/ha
Minnesota	-	2,470 fish/littoral ha	0.6-1.1 kg fish/ha	-
Mississippi	-	-	25 fish/ha	-
Missouri	-	-	15-124 fish/ha	25 fish/ha
Montana		No established rate	No established rate	-
Nebraska	-	2,470 fish/ha	124 fish/ha	25-124 fish/ha
Nevada	-	No established rate – based on availability of fish.	-	-
New Jersey	-	-	49-124 fish/ha	49 fish/ha
New Mexico	-	No established rate – based on availability of fish.	-	-
New York	-	7,414 fish/ha*	50 fish/ha*	72 fish/ha**
North Carolina	-	-	42 fish/ha	-
North Dakota	-	-	Varies across the state but the maximum is 370 fish/ha	-
Ohio	-	2,470 fish/ha	124-865 fish/ha	-
Oklahoma	-	222-1,100 fish/ha	11-22 fish/ha	-
Ontario	5,000 eggs/ha	2,000 fish/ha	100-125 fish/ha	25-50 fish/ha
Pennsylvania	-	1,905-2,639 fish/ha	27-114 fish/ha	-
Québec	-	2,500 fry/ha (2.0 million maximum)	-	-

Jurisdiction	Eyed Eggs	Fry	Summer Fingerlings	Advanced Fingerlings
Saskatchewan				
South Dakota	-	1,235-4,949 fry/ha	247 fish/ha	10 fish/ha
Tennessee	-	-	Target is 25 fish/ha	
Texas	-	4,942 fry/ha (reservoirs < 2,000 ha); 2,471 fry/ha (reservoirs > 2,000 ha)	124 fish/ha	-
Vermont	-	-	No established rate	-
Virginia	-	247 fry/ha (Anomaly waters)	247 fish/ha (Priority waters); 62-124 fish/ha (Diversity waters); 12-37 fish/ha (Anomaly waters); 310-620 fish/km (Rivers)	-
Washington	-	No established rate.	-	-
West Virginia	-	-	62 fish/ha	-
Wisconsin	-	2,470-4,450 fish/ha	86 fish/ha	25 fish/ha
Wyoming	-	3,706 fish/ha	49 fish/ha	-

* From Burlingame (2006, 2007)

** Based on waters stocked in 2002.

Appendix 8. Walleye stocking dates in North America.

Jurisdiction	Stocking Dates
Alabama	<ul style="list-style-type: none">• April.
Alberta	<ul style="list-style-type: none">• Fry are stocked in early June.• Summer fingerlings are stocked in mid July.
Arkansas	-
Colorado	<ul style="list-style-type: none">• Fry are stocked in April.• Fingerlings stocked in late spring – early summer to coincide with the hatch of forage species.
Connecticut	<ul style="list-style-type: none">• Advanced fingerlings are stocked in the fall when temperatures are cooler. Generally this occurs on or about November 1 but not earlier than October 15 and not later than December 15.• In some cases where there were complications, fingerlings are stocked in the early spring.
Georgia	<ul style="list-style-type: none">• Mid May.
Idaho	<ul style="list-style-type: none">• Fry are stocked in late May-early June.
Illinois	-
Indiana	<ul style="list-style-type: none">• Summer fingerlings stocked in June.• Fall fingerlings stocked in late September-early October.
Iowa	-
Kansas	<ul style="list-style-type: none">• Fry stocked in early-mid April.• Summer fingerlings stocked in June.• Advanced fingerlings stocked in September.
Kentucky	<ul style="list-style-type: none">• Fry stocked in late April-early May.• Fingerlings stocked in late May-early June.
Manitoba	<ul style="list-style-type: none">• Fry are stocked in late May.• Fingerlings are stocked in mid August.
Maryland	<ul style="list-style-type: none">• May.
Michigan	<ul style="list-style-type: none">• Stocking window during seasonal periods of high forage abundance.
Minnesota	-
Mississippi	<ul style="list-style-type: none">• Fry are stocked in March.• Fingerlings are stocked in April-early May.
Missouri	<ul style="list-style-type: none">• Fry are stocked from mid to late May.

Jurisdiction	Stocking Dates
Montana	<ul style="list-style-type: none"> • Fry are stocked in late April-early May. • Fingerlings are stocked in June. • Advanced fingerlings are stocked in late August-early September.
Nebraska	<ul style="list-style-type: none"> • Fry stocking occurs in April, summer fingerlings are stocked in June and advanced fingerlings are stocked in late summer or early fall.
Nevada	<ul style="list-style-type: none"> • May.
New Jersey	<ul style="list-style-type: none"> • Pond-reared fingerlings are stocked in June. • Advanced fingerlings are stocked in July.
New Mexico	<ul style="list-style-type: none"> • April-early May.
New York	-
North Carolina	<ul style="list-style-type: none"> • Mid May.
North Dakota	<ul style="list-style-type: none"> • Late June.
Ohio	<ul style="list-style-type: none"> • Fingerlings are stocked in early summer (mid May-early June).
Oklahoma	<ul style="list-style-type: none"> • Fry stocking occurs in the spring. • Fingerlings are stocked in the early summer.
Ontario	<ul style="list-style-type: none"> • Pond fingerlings are stocked in early summer to coincide with highest food abundance. • Advanced fingerlings are stocked in early fall.
Pennsylvania	-
Québec	<ul style="list-style-type: none"> • Fry are stocked during the period of expected hatching for the region (preferably when weather is calm). • Adults are stocked at the time of their capture.
Saskatchewan	<ul style="list-style-type: none"> • Late spring-early summer (e.g., June)
South Dakota	<ul style="list-style-type: none"> • Fry are stocked in spring (May). • Summer fingerlings are stocked in mid-late June. • Advanced fingerlings are stocked in September-October.
Tennessee	<ul style="list-style-type: none"> • Fingerlings are stocked in early May.
Texas	<ul style="list-style-type: none"> • Fry are stocked in mid April. • Fingerlings are stocked in mid May.
Vermont	<ul style="list-style-type: none"> • Fry are stocked in May. • Fingerlings are stocked in June.
Virginia	<ul style="list-style-type: none"> • Stocking should occur at a time when foraging opportunity is maximized, potential predation is minimized and future homing can create enhanced fishing opportunities.

Jurisdiction	Stocking Dates
Washington	<ul style="list-style-type: none"> • Fry are stocked in early May.
West Virginia	<ul style="list-style-type: none"> • Fingerlings are stocked in late May.
Wisconsin	-
Wyoming	<ul style="list-style-type: none"> • Fingerlings are stocked from early May-mid June.

Appendix 9. Walleye stocking temperatures in North America.

Jurisdiction	Water Temperatures
Alabama	<ul style="list-style-type: none">• Lake temperatures are usually near 20°C.
Alberta	<ul style="list-style-type: none">• Try to match holding and recipient water temperatures (usually in the 12-15°C range).
Arkansas	-
Colorado	-
Connecticut	<ul style="list-style-type: none">• Fall lake temperatures generally range between 9-14°C when fish are stocked.
Georgia	<ul style="list-style-type: none">• Reservoir and rearing pond temperatures are similar at approximately 20°C.
Idaho	-
Illinois	<ul style="list-style-type: none">• Temperatures range from 10-29°C.
Indiana	<ul style="list-style-type: none">• No stocking temperature guidelines – water is tempered if there is > 5°C temperature differential.
Iowa	-
Kansas	<ul style="list-style-type: none">• Fry are stocked at approximately 13°C.• Summer fingerlings are stocked when recipient water temperatures range from 21-23°.• Advanced fingerlings stocked at water temperatures of approximately 24°C.
Kentucky	<ul style="list-style-type: none">• Water temperatures in stocked waters usually range from 23-28°C.• There is no tempering of water.
Manitoba	<ul style="list-style-type: none">• Holding and recipient temperatures usually similar (12-15°C range).
Maryland	<ul style="list-style-type: none">• Reservoir temperatures are usually in the 17-19°C range.• Water is tempered if there is a significant difference from holding and recipient temperatures.
Michigan	-
Minnesota	-
Mississippi	<ul style="list-style-type: none">• At water temperatures > 10°C.
Missouri	<ul style="list-style-type: none">• Stocked waters range from 18-22°C when walleye are released.

Jurisdiction	Water Temperatures
Montana	<ul style="list-style-type: none"> • Receiving waters are usually less than 23°C. • Target is not to have greater than a 10°C differential between holding and receiving water.
Nebraska	<ul style="list-style-type: none"> • Recipient water temperatures are near 13°C in the spring; 18-22°C in the summer and usually 20-24°C in the fall.
Nevada	-
New Jersey	<ul style="list-style-type: none"> • There is no targeted water temperature but water tempering is done if the holding and recipient water temperature differential exceeds 5°C.
New Mexico	<ul style="list-style-type: none"> • Stocked reservoirs generally range from 10-13°C.
New York	-
North Carolina	-
North Dakota	<ul style="list-style-type: none"> • Recipient water temperatures usually in the 20-24°C range.
Ohio	-
Oklahoma	<ul style="list-style-type: none"> • Fry should be stocked when receiving water temperatures range between 11-16.5°C. • Fingerlings should be stocked when receiving water temperatures range between 18-22°C.
Ontario	<ul style="list-style-type: none"> • Water temperatures in the receiving waterbody should range between 18-23°C. • No stocking should be conducted when temperatures in the receiving waterbody exceed 26°C. • There should not be more than a 5°C variation in water temperature between holding tanks and receiving waterbody.
Pennsylvania	-
Québec	-
Saskatchewan	<ul style="list-style-type: none"> • Lakes are usually 10-15°C when stocked. • Holding water is tempered to approximate lake water temperatures.
South Dakota	<ul style="list-style-type: none"> • Spring stocking temperatures are usually in the 11-16°C range. • Summer stocking temperatures usually range from 16-22°C. • Fall water temperatures are usually 18°C.
Tennessee	<ul style="list-style-type: none"> • Reservoir temperatures usually range from 15-17°C. • There are seldom significant differences between holding temperature and reservoir temperature.
Texas	<ul style="list-style-type: none"> • Fry stocking occurs at water temperatures of 15-16°C. • Fingerling stocking at water temperatures of 18-26°C.

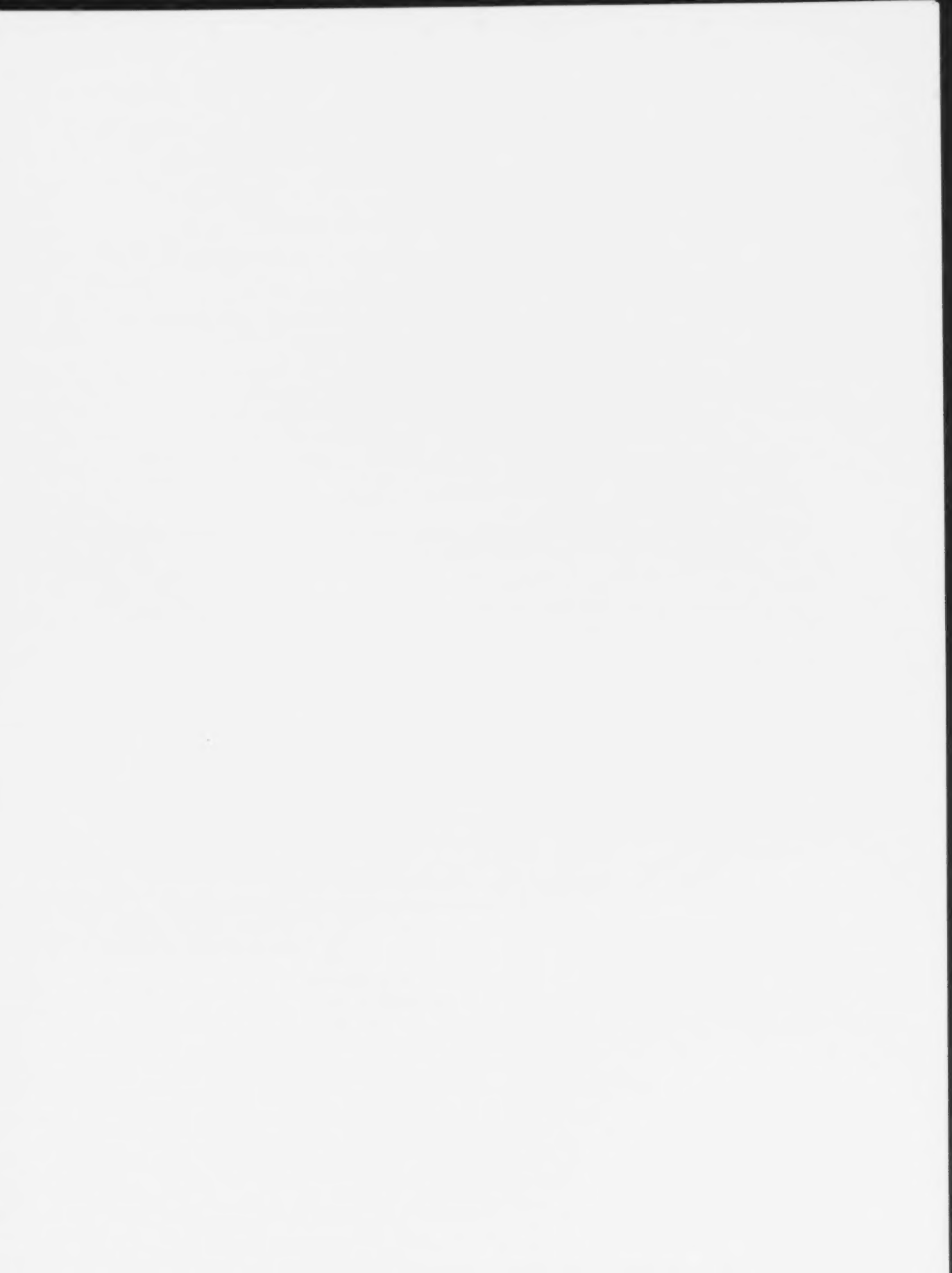
Jurisdiction	Water Temperatures
Vermont	<ul style="list-style-type: none"> • Water temperatures can vary significantly but the goal is to stock walleye when the recipient water temperature is approximately 15°C.
Virginia	<ul style="list-style-type: none"> • Reservoir temperatures usually range between 20-23°C at the time of stocking.
Washington	<ul style="list-style-type: none"> • Stocked waters usually range from 11-14°C. • Holding water temperatures are usually near 15°C.
West Virginia	<ul style="list-style-type: none"> • Water temperature in the recipient waterbody is usually near 24°C. • Water is tempered if there is a temperature differential.
Wisconsin	-
Wyoming	-

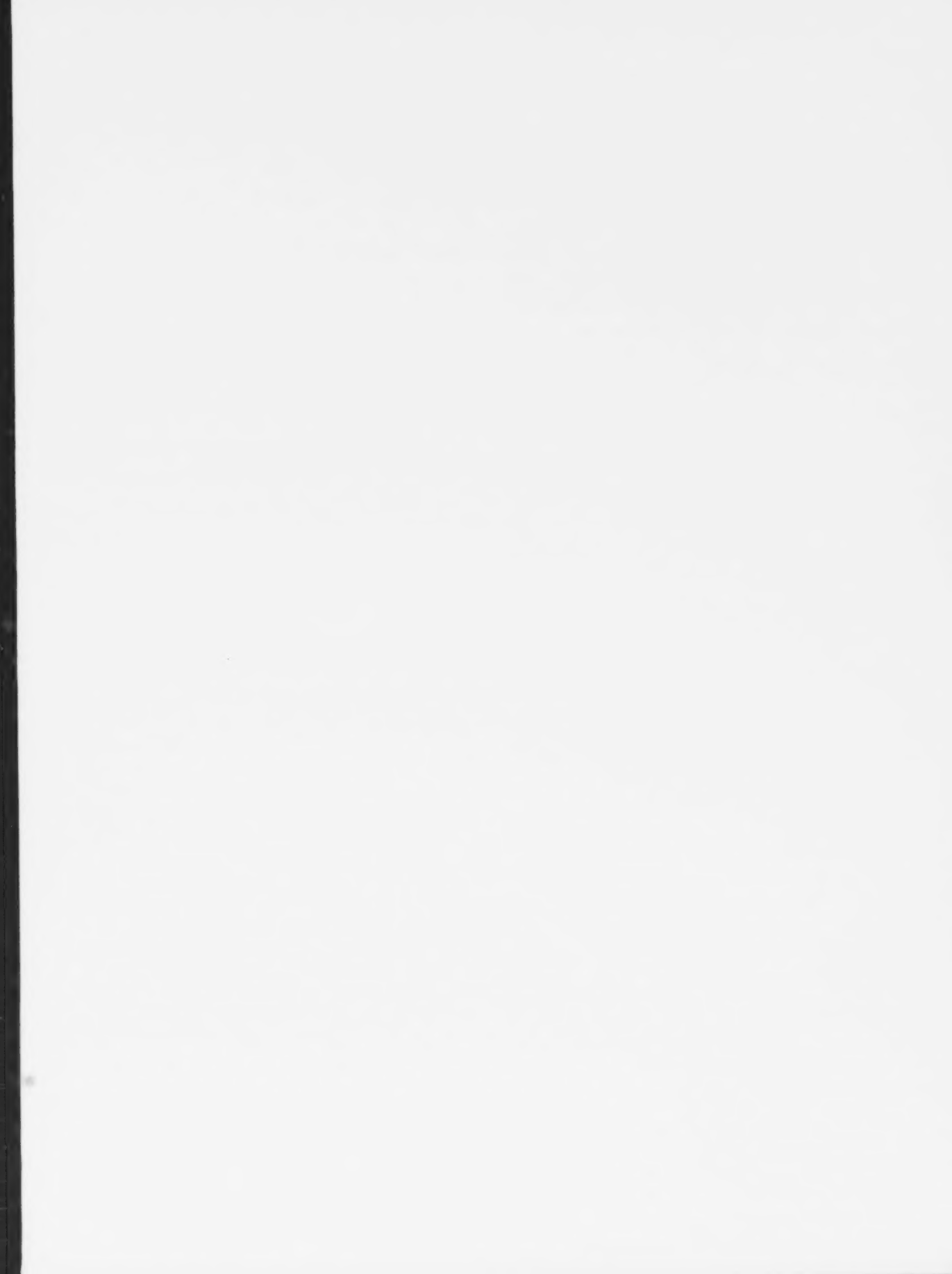
Appendix 10. Walleye release sites utilized by various North American jurisdictions.

Jurisdiction	Release Sites and Method of Distribution
Alabama	<ul style="list-style-type: none"> • Fish are distributed in small numbers at various locations (e.g., coves, tributaries, etc.) by boat.
Alberta	-
Arkansas	-
Colorado	-
Connecticut	<ul style="list-style-type: none"> • Walleye are distributed by boats along the shore in areas which are known not to have an abundance of predators. • In water ranging from 1.2 – 3.1 m (4-10 feet) in depth. • Sometimes fish are stocked at boat launch sites.
Georgia	<ul style="list-style-type: none"> • Scatter planning is practiced as much as possible. • For small waterbodies fish are stocked from at least two different sites (e.g., boat launches). • For larger reservoirs fish are scatter planted by boat. • Efforts are made not to exceed 35,000 fish per site.
Idaho	<ul style="list-style-type: none"> • Fry are released along a leeward shoreline.
Illinois	<ul style="list-style-type: none"> • Fry are stocked in open water at mid lake (high zooplankton densities) by boat. • Fingerlings are stocked at multiple access points (away from dams) by hatchery truck.
Indiana	<ul style="list-style-type: none"> • Fish are stocked off boat ramps.
Iowa	<ul style="list-style-type: none"> • Avoid stocking rivers during periods of high discharge. • Release fish in areas upstream of targeted areas.
Kansas	<ul style="list-style-type: none"> • Early fry are stocked at the upper (warmer) ends of reservoirs. Stocking sites move down the reservoir as water warms up. • Fingerlings are stocked in offshore waters by boat. • Efforts are made to evaluate predator abundance and zooplankton densities to ensure stocking sites are low in predator abundance but high in forage.
Kentucky	<ul style="list-style-type: none"> • Fish released from hatchery truck at access points.
Manitoba	<ul style="list-style-type: none"> • Fish stocked from a boat in relatively shallow water on a wave-exposed shoreline.
Maryland	<ul style="list-style-type: none"> • Walleye are flushed from hatchery tanks at 2-3 different access points.

Jurisdiction	Release Sites and Method of Distribution
Michigan	-
Minnesota	<ul style="list-style-type: none"> • The number of release sites increases as the size of stocked lake increases and morphometry becomes more complex.
Mississippi	-
Missouri	<ul style="list-style-type: none"> • Most walleye are stocked by boat in open water to avoid shoreline centrarchid predators. • Transport tanks on boats use gravity feed to avoid handling stress.
Montana	<ul style="list-style-type: none"> • Usually offshore at access points. • If littoral predators (e.g., smallmouth bass) are present, walleye will sometimes be released in the open lake.
Nebraska	<ul style="list-style-type: none"> • No established guidelines for release sites. • Fry stocking is conducted from a boat in mid lake to avoid littoral predators. • Fingerlings are usually released at boat launch sites.
Nevada	<ul style="list-style-type: none"> • By boat and offshore near access points.
New Jersey	<ul style="list-style-type: none"> • All lakes are float stocked by boat to spread out the fish.
New Mexico	<ul style="list-style-type: none"> • Fry are released at boat launches over a period of 2-3 weeks.
New York	-
North Carolina	<ul style="list-style-type: none"> • Walleye are released at boat ramps.
North Dakota	<ul style="list-style-type: none"> • Walleye stocked at boat launches from the hatchery truck.
Ohio	<ul style="list-style-type: none"> • In large rivers walleye should be stocked in turbid upstream areas to provide refuge from predation.
Oklahoma	<ul style="list-style-type: none"> • Fry should be stocked over open sand substrate. • Fingerlings should be stocked in open water.
Ontario	<ul style="list-style-type: none"> • Fry should be stocked in open water of a lee shoreline. • Fingerlings should be stocked in nearshore sites.
Pennsylvania	-
Québec	<ul style="list-style-type: none"> • Fry should have a uniform dispersion of 50% of the fish in spawning areas and 50% in the pelagic zone. • Adults should be released in an environment similar to the one from which they were taken.
Saskatchewan	<ul style="list-style-type: none"> • At access points and offshore (from a boat).

Jurisdiction	Release Sites and Method of Distribution
South Dakota	<ul style="list-style-type: none"> • Fry are sometimes released in open water from a boat. • Fingerlings are usually stocked along the calm shoreline in a protected area.
Tennessee	<ul style="list-style-type: none"> • Walleye are released from shore at a boat ramp.
Texas	<ul style="list-style-type: none"> • Walleye are stocked by boat along rock and gravel shorelines or into open water habitat.
Vermont	<ul style="list-style-type: none"> • Walleye are stocked by boat. Fry are released in areas believed to have plankton; fingerlings are stocked in littoral areas.
Virginia	<ul style="list-style-type: none"> • Walleye should be stocked in pelagic areas (away from boat ramps) to minimize predation by littoral-based centrarchids. • Walleye should be released in the upper portion of most impoundments where primary production is higher. • In systems lacking fishable tributaries, stocking near a riprap dam may enhance angling opportunities if spawning fish congregate during early spring.
Washington	<ul style="list-style-type: none"> • Fish are usually released from shore at a boat ramp but sometimes fry are scatter-planted from a boat.
West Virginia	<ul style="list-style-type: none"> • Varies – walleye at some sites (e.g., larger rivers) are dispersed. At other sites they are stocked from shore (littoral zone) at an access point.
Wisconsin	
Wyoming	<ul style="list-style-type: none"> • Most walleye are released from the hatchery truck at an access point.





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